CLAIMS

1. A method for producing a pattern film-coated article which comprises the steps of coating a photosensitive composition comprising an organometallic or organosilicon compound having photosensitivity and a hydrolyzable metal or silicon alkoxide on a substrate, irradiating the coated film on the substrate with light to polymerize the exposed portions of the coated film and then dissolving unexposed portions of the coated film to remove them, wherein the organometallic or organosilicon compound is an allyl group-containing metal or silicon alkoxide.

2. The method of claim 1, wherein the allyl group-containing metal or silicon alkoxide is allyltrimethoxysilane or allyltriethoxysilane.

3. The method of claim 1 or 2, wherein the hydrolyzable metal or silicon alkoxide includes a silicon alkoxide, a titanium alkoxide, a zirconium alkoxide or an aluminum alkoxide.

4. The method of any one of claims 1 to 3, wherein the hydrolyzable metal or silicon alkoxide includes a silicon tetra- or tri-alkoxide, a titanium tetra- or tri-alkoxide, a zirconium tetra- or tri-alkoxide or an aluminum trialkoxide.

5. The method of any one of claims 1 to 4, wherein the hydrolyzable metal or silicon alkoxide includes at least one alkoxide selected from the group consisting of tetraethoxysilane, tetramethoxysilane, tributoxyaluminum, tetrapropoxyzirconium, tetrabutoxyzirconium, tetraisopropoxytitanium, tetrabutoxytitanium,

methyltriethoxysilane, methyltrimethoxysilane, phenyltriethoxysilane and phenyltrimethoxysilane.

6. The method of any one of claims 1 to 5, wherein the photosensitive composition contains the hydrolyzable metal or silicon alkoxide in an amount of 1 to 50 parts by weight based on 100 parts by weight of the allyl group-containing metal or silicon alkoxide.

7. The method of any one of claims 1 to 6, wherein the photosensitive composition further contains a photoreaction initiator in a proportion of 0.001 to 0.2 moles per mole of the allyl group-containing metal or silicon alkoxide.

8. The method of any one of claims 1 to 7, wherein the photosensitive composition further contains a polymerization promoter in a proportion of 0.0005 to 0.1 mole per mole of the total of the metal or silicon alkoxide and the allyl group-containing metal or silicon alkoxide.

9. The method of any one of claims 1 to 8, wherein the photosensitive composition further contains water in a molar proportion which is 1 to 20 times as much as the total of the hydrolyzable metal or silicon alkoxide and the allyl group-containing metal or silicon alkoxide having photosensitivity.

10. The method of any one of claims 1 to 9, wherein the photosensitive composition contains 5 to 95.49% by weight of the allyl group-containing metal or silicon alkoxide, 1 to 50% by weight of the hydrolyzable metal or silicon alkoxide, 0.5 to 10% by weight of the photoreaction initiator, 0.01 to 10% by weight of the polymerization promoter, 0 to 50% by weight of a solvent and 3 to 50% by weight of water.

11. A method for producing a pattern film-coated article which comprises the steps of coating a photosensitive composition containing an allyl group-containing trialkoxysilane on a substrate, irradiating the coated film on the substrate with light to polymerize the exposed portions of the coated film and then dissolving unexposed portions of the coated film to remove them.

12. The method of claim 11, wherein the allyl group-containing trialkoxysilane is allyltrimethoxysilane or allyltriethoxysilane.

13. The method of claim 11 or 12, wherein the photosensitive composition further contains a photoreaction initiator in a proportion of 0.001 to 0.2 moles per mole of the allyl group-containing trialkoxysilane.

14. The method of any one of claims 11 to 13, wherein the photosensitive composition further contains a polymerization promoter in a proportion of 0.0005 to 0.1 mole per mole of the allyl group-containing trialkoxysilane.

15. The method of any one of claims 11 to 14, wherein the photosensitive composition further contains water in a molar proportion which is 1 to 20 times as much as the allyl group-containing trialkoxysilane.

16. The method of any one of claims 11 to 15, wherein the photosensitive composition contains 5 to 96.49% by weight of the allyl group-containing trialkoxysilane, 0.5 to 10% by weight of the photoreaction initiator, 0.01 to 10% by weight of the polymerization promoter, 0 to 50% by weight of a solvent and 3 to 50% by weight of water.

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17. The method of any one of claims 1 to 16, wherein the pattern film-coated article is an optical waveguide, diffraction grating or microlens.

18. A photosensitive composition comprising an allyl group-containing metal or silicon alkoxide, a photoreaction initiator, a polymerization promoter and water as main components.

19. The photosensitive composition of claim 18, which further contains a hydrolyzable metal or silicon alkoxide.

20. The photosensitive composition of claim 19, wherein the hydrolyzable metal or silicon alkoxide includes a silicon alkoxide, a titanium alkoxide, a zirconium alkoxide or an aluminum alkoxide.

21. The photosensitive composition of claims 19, wherein the hydrolyzable metal alkoxide includes a silicon tetra- or tri-alkoxide, a titanium tetra- or tri-alkoxide, a zirconium tetra- or tri-alkoxide or an aluminum trialkoxide.

22. The photosensitive composition of claims 19, wherein the hydrolyzable metal or silicon alkoxide includes at least one alkoxide selected from the group consisting of tetraethoxysilane, tetramethoxysilane, tributoxyaluminum, tetrapropoxyzirconium, tetrabutoxyzirconium, tetraisopropoxytitanium, tetrabutoxytitanium, methyltriethoxysilane, methyltrimethoxysilane, phenyltriethoxysilane and phenyltrimethoxysilane.

23. The photosensitive composition of any one of claims 18 to 22, wherein the allyl group-containing metal or silicon

alkoxide is allyltrialkoxysilane.

24. The photosensitive composition of claim 23, wherein the allyltrialkoxysilane is allyltrimethoxysilane or allyltriethoxysilane.

25. The composition of claim 23, wherein the photosensitive composition contains 5 to 96.49% by weight of allyltrialkoxysilane, 0.5 to 10% by weight of the photoreaction initiator, 0.01 to 10% by weight of the polymerization promoter, 0 to 50% by weight of a solvent and 3 to 30% by weight of water.

26. The composition of any one of claims 18 to 24, wherein the photosensitive composition contains 5 to 95.49% by weight of the allyl group-containing metal or silicon alkoxide, 1 to 50% by weight of the hydrolyzable metal or silicon alkoxide, 0.5 to 10% by weight of the photoreaction initiator, 0.01 to 10% by weight of the polymerization promoter, 0 to 50% by weight of a solvent and 3 to 50% by weight of water.

27. The composition of any one of claims 18 to 26, wherein the photosensitive composition further contains an acid catalyst in an amount of 0.00002 to 10% by weight.